

North Pacific Updates on ACL Development

May 2011

Groundfish FMPs

The NPFMC's two Groundfish FMPs include a suite of catch limits for individual groundfish stocks and assemblages. These catch limits include an overfishing limit (OFL), an acceptable biological catch limit (ABC) and a total allowable catch limit (TAC), where $TAC \leq ABC < OFL$. There is a chain-of-review process, starting with the development of the SAFE chapter by the assessment authors, which contains recommendations of OFL and ABC. After internal agency review, the chapter and recommendations are reviewed by the appropriate Plan Team, which may result in revised recommendations. The SSC provides a second level of peer review, which results in a final OFL and ABC. The TAC is then set by the Council.

The OFL and ABC determinations incorporate a tier system for addressing scientific uncertainty. For groundfish, the annual catch limit (ACL) is the ABC, and TAC meets the definition of an allowable catch target (ACT) per the guidelines -- it is a target set not to exceed the ABC. The initial OFL and ABC values (called "maximum permissible") are based on a set of mathematical formulae as prescribed through a set of six tiers

Groundfish catch is monitored through comprehensive at-sea observer coverage, as well as an electronic catch reporting system. In-season accountability measures are designed both to prevent the TAC from being exceeded (e.g. directed fishing closures) and to respond if the TAC is exceeded (e.g. prohibition of retention). There are no recreational fisheries for groundfish in Federal waters, and commercial removals from state water fisheries and bycatch in non-target fisheries accrue towards the TAC, in most cases. Research catches are included as a removal in the stock assessments.

Progress Report: No groundfish stocks are overfished or undergoing overfishing, so no rebuilding plans are required. The Groundfish FMPs have been amended to describe how the current specification process meets the requirements of the mandatory NS1 Guideline provisions. **Amendments 96/87 were approved on October 6, 2010 (75 FR 61639).**

The Groundfish FMP was amended to include a description of the specification of minimum stock size thresholds (MSST) defining when a stock is considered overfished, a description of measures that are taken if and when a stock drops below MSST, a description of accountability measures that are triggered if an ACL (i.e., the ABC) is exceeded, and a description of how catch from all sources – including bycatch, scientific research (including EFPs), and all fishing activities – is counted against the OY.

The FMP was also amended to include a description of how the tier levels for ABC and OFL are based on the scientific knowledge about the stock or stock complex and the scientific uncertainty in the estimate of OFL and any other scientific uncertainty. An analysis done by the AFSC indicated that for the stocks and sources of uncertainty examined, ABCs based on the existing tier levels would have a low probability of exceeding the real, but unknown, OFL (AFSC 2009). **Additional effort is underway to examine more explicit use of uncertainty in the setting of groundfish ABCs; the SSC will be reviewing a discussion paper on this issue in June 2011.**

The Groundfish FMPs were also amended to define the stocks in the fishery and to add an Ecosystem Component category for certain species. The current target and some non-target species that are currently included in the "other species" categories are now defined as 'in the fishery', and ACLs would be set for them. The current forage fish category and prohibited species category are now included in the Ecosystem Component (EC) species category. The non-specified category is considered outside of the fishery and will be examined in the future to determine if any species in this category should be included

in the target category or EC category (e.g., giant grenadier). Squid and octopus complexes will be evaluated for possible inclusion under the EC category under a future plan amendment.

	BSAI and GOA Groundfish	BSAI Crabs	AK Scallops
Stocks in the fishery	Targets and vulnerable non-targets	Targets	Target: Weathervanes (only)
Ecosystem Components	Forage species, prohibited species	None	Non-Weathervane scallop stocks
OFL/ABC control rules	Status quo (Tiers)	OFL Tiers, P*=0.49 (Tiers 1-4), ABC = 90% of OFL (Tier 5)	OFL = adjusted MSY ABC = 90% of OFL
Uncertainty	Status quo (Tiers) for now. Meets NS1 requirements.	Resulting buffer accounts for uncertainty: P*=0.49 (Tiers 1-4), ABC = 90% of OFL (Tier 5)	Buffer accounts for uncertainty: ABC = 90% of OFL
AMs	Status quo	Status quo	Status quo

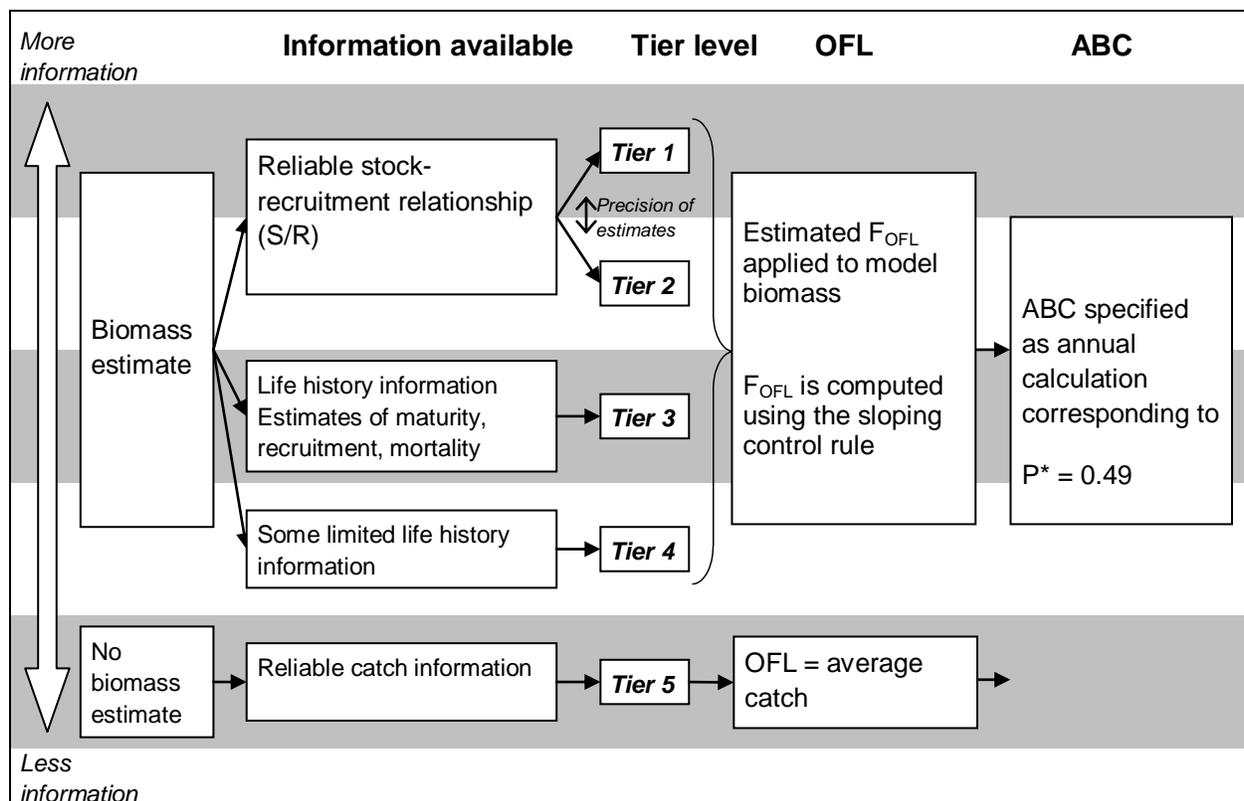
BSAI Crab FMP

The State/Federal Bering Sea and Aleutian Islands Crab FMP currently specifies annual OFLs (set by the SSC) and TACs (set by the State of Alaska) for individual stocks, where $TAC \leq OFL$. Similar to the Groundfish FMPs, the OFLs are established by tier levels, based on the level of information available. The Crab FMP did not previously include ABC levels due to the delegated management system with the State of Alaska whereby no ABC is specified, but a TAC-level is established by the State below the OFL.

Progress Report: The Council is working on rebuilding plans for the crab stock that was deemed ‘overfished’ in 2010 (Bering Sea Tanner crab) when the stocks fell below the minimum stock size threshold (MSST) following years of poor recruitment. **Alternatives for the Tanner Crab rebuilding plan are being developed and the Council will take action on this plan in 2012.** One stock, Pribilof blue king crab remains well below MSST (‘overfished’) despite not having a fishery since 1999, establishment of a no-trawl zone to protect the stock since 1995, and closures of other fisheries to limit bycatch. The current rebuilding plan has not achieved adequate progress towards rebuilding the stock by 2014, and as such, the Council is in the process of considering modifications to the rebuilding plan. **The Council is scheduled to take final action on revising the Pribilof blue king crab rebuilding plan in October 2011.**

The Council took final action on the Crab ACL analysis in October 2010, and implementation is anticipated prior to the start of the first crab fishery on October 15. The Council considered two different approaches for establishing an ABC control rule by tier level for crab stocks. These approaches were to use a fixed buffer value (where $ABC = (1-X\%)$ of OFL and X is the selected buffer) or to set ABC using a P^* approach whereby the ABC is calculated based upon the annually estimated buffer value corresponding to a fixed level of risk (and estimated scientific uncertainty) characterized by a policy choice on the probability of overfishing. An extensive analysis was completed (NPFMC 2010) which characterized the short-term, medium-term and long-term implications of harvest under a range of buffer values and P^* s. A critical aspect to this analysis was the ability to estimate the scientific uncertainty in the OFL and calculate a corresponding probability density function (PDF) for estimating the appropriate buffer to correspond to the selected P^* values.

The Council's Crab Plan Team (CPT) and SSC determined that model uncertainty alone (called \square_w) is insufficient to characterize the total uncertainty in the OFL estimate particularly for crab stocks given limited information to validate some biological parameter choices and thus some additional means of considering uncertainty is necessary to capture the PDF of the OFL. Direct calculation of total uncertainty (i.e. through a retrospective evaluation approach) produced insufficient results for characterizing the PDF and alternative means were considered. After iterative review and recommendations by the CPT and SSC, a final system was proposed whereby total uncertainty was considered to be a combination of modeled uncertainty as well as additional uncertainty not characterized within the assessment model itself. This additional uncertainty (called \square_b) was characterized by a range of constant values with stocks characterized into low, medium and high categories of information based upon qualitative consideration of the information available by stock for considerations not included in the model-based estimate of uncertainty. These include whether key population dynamics parameters are pre-specified, whether the survey catchability parameter is fixed, and whether there is uncertainty in the F_{MSY} basis and B_{MSY} estimation. The Plan Teams and SSC made recommendations on the methodology but did not recommend specific values for P^* or buffers, because those considerations were policy



choices for the Council to make given its desired level of precaution. The Council considered a range of alternative P^* values from 0.1 - 0.5 (including 0.5 as an upper limit is for display purposes only since this option implies a buffer of zero – i.e., $ABC=OFL$ -- a 50% probability of ABC exceeding the true OFL). An extensive risk analysis was presented for all options indicating stock status trajectories, estimated forgone revenue and probability of overfishing for all stocks under each scenario. The Council's preferred alternative was to select an ABC control rule based on a P^* of 0.49 for stocks in Tiers 1-4 and to indicate that only within-model (σ_w) uncertainty was to be considered in estimating the PDF of the OFL. Understanding that this results in extremely small buffers (e.g. $ABC = > 98\%$ of OFL for all stocks), the Council indicated that additional uncertainty will be considered by the State of Alaska in establishing directed catch levels below this value. For Tier 5 stocks where OFL is based on average catch, the Council selected a constant buffer approach of 10% (or $ABC = 90\%$ OFL). The Council further directed the CPT and SSC to continue exploring factors influencing scientific uncertainty in the OFL, and which factors should best be addressed in the setting of ABC and TAC.

Scallop FMP

The State/Federal Alaska Scallop FMP specifies an OFL for weathervane scallops and annual guideline harvest levels (GHL) for stock areas that cumulatively are set well below the OFL. The OFL is currently set equal to $MSY = 1.24$ million pounds of shucked scallop meats, and is set at a statewide level. The upper end of the GHL in each management area is analogous to a TAC set by sub-stock. The Scallop FMP does not currently include ABC levels, and thus these levels have to be established to meet the requirements for an ACL.

With regard to AMs in the scallop fishery, the fishery operates as a cooperative and has 100% at-sea observer coverage. The GHL is prevented from being exceeded by directed fishing closures. There is no recreational fishery. The state water commercial fishery is managed under separate GHLs. Catches are reported on fish tickets at the time of landing.

Progress Report: The Council took final action in October 2010 on the Scallop ACL amendment analysis, and implementation is anticipated prior to the end of 2011. The Council's preferred alternative contained two main actions, defining an ACL for weathervane scallop stocks and establishing which stocks are 'in the fishery' and which are to be contained in a new ecosystem component. The Council selected a maxABC control rule to establish a 10% buffer between OFL and ABC, such that $ABC = 90\%$ of OFL. This is for the weathervane scallop stock only. In conjunction with this, the Council revised the current MSY estimate which is the basis for the Statewide OFL for weathervane scallops. The average catch estimate was revised upwards to account for estimated discards occurring over the time frame of the average catch calculation. ACLs (established as $ACL = ABC$) will account for all removals. Additional removals are due almost exclusively to discards in the directed scallop fishery. This ABC level is set on a statewide basis given the lack of regional biomass information. The FMP management measures only apply to the commercial weathervane scallop fishery; there are currently no fisheries for the other scallop species. Other scallop species under the FMP, rock, pink and spiny scallop were moved to an Ecosystem Component under the FMP. Currently no fisheries exist for these species and they are irregularly caught as incidental catch in the directed fishery as well as sporadically encountered during trawl and camera-sled surveys.

Salmon FMP

The Salmon FMP defers regulation of the sport fishery and the commercial troll salmon fishery to the State of Alaska. Although the Council and NMFS are removed from routine management of salmon fisheries in the EEZ, the FMP asserts and reserves Federal authority and general NMFS and Council participation in and oversight of salmon management in the EEZ.

The FMP establishes two management areas within its fishery management unit, the East Area and the

West Area. Regulations for salmon fisheries in the EEZ are promulgated by the State. The FMP allows trolling in the East Area but FMP prohibits all commercial salmon fishing in the West Area, except in three historical net areas (Cook Inlet area, Prince William Sound area, and the Alaska Peninsula area).

The intended effect of the FMP is to conserve and manage the salmon resources in the North Pacific Ocean and to allow the troll fisheries in State and EEZ waters to be managed as one fishery. The FMP explicitly defers management of the commercial troll fishery to the State, to manage consistent with State and Federal laws, including the US-Canada Pacific Salmon Treaty. State management of the salmon fishery is based, by direction from the State constitution, on the sustained yield principle. Regulations for the Alaska salmon fishery are made by the Alaska Board of Fisheries (Board). The Board has the authority to allocate salmon available for harvest among user groups. ADF&G manages the fishery inseason and issues emergency regulations to achieve conservation objectives and to implement allocation policies established by the Board. ADF&G reviews salmon escapement goals and stock status for each salmon management area on a three-year cycle, consistent with the Board's regulatory review cycle. Escapement goal and stock status reviews are prepared prior to Board review.

The State has many decades of sustainable salmon management, utilizing escapement goals and inseason management decisions by local managers. Alaska salmon fisheries are conservatively managed by allowing fishing with specific gears, in specific areas, at specific times. Alaska salmon fisheries generally occur in areas terminal or near-terminal to natal spawning systems, where the fish are highly concentrated. Generally, run times are consistent and predictable from one year to the next; salmon run sizes, however, are highly variable.

Under State management, salmon fishery openings are set pre-season through regulations adopted by the Board or inseason through management authority that has been delegated to ADF&G. Salmon seasons are managed and adjusted inseason through emergency orders in response to escapement goal level and run size. State escapement enumeration programs are in place, with direct or indicator stock escapement monitoring for most Chinook, sockeye, coho, and pink salmon, and for chum in the Arctic-Yukon-Kuskokwim region. Fishing is allowed to continue only if inseason assessment of run strength indicates a harvestable surplus; the level of fishing depends on the strength of the inseason run. Local area managers, under authority delegated by the ADF&G Commissioner, open and close the fisheries in response to inseason assessments of the strength and timing of runs. Weak salmon runs do occur and are unavoidable. Inseason, emergency order management strives to avoid the main principle of overfishing threat: intense fishing activity during weak runs.

Progress Report: The Council discussed alternatives and options for updating the FMP in April 2011. The Council selected Alternative 3 as its preferred preliminary alternative, which would modify the FMP's management unit to exclude the three historical fishing areas in the West Area, and defer management to the State of Alaska in areas where the FMP does apply.

The Council also requested analysis of annual catch limit and accountability measure requirements using the international fishery agreement exception for stocks managed under the Pacific Salmon Treaty and the State's salmon management program as an "alternative approach" for satisfying the National Standard 1 requirements. The Council will be working from a letter from NMFS clarifying the applicability of an "alternative approach" for Alaska salmon fisheries: (a) the FMP must comply with Magnuson-Stevens Act and NS1 requirements; (b) State salmon escapement goal management appears to be consistent with the MSA and NS1 requirements; and (c) an alternative approach to satisfy those requirements may be appropriate because of salmon life history characteristics. The Council plans to hold an informational workshop for stakeholders, agencies, and other interested participants. **The Council has scheduled initial review of the analysis for October, with final action in December 2011.**